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SCIENCE NEWS LETTER

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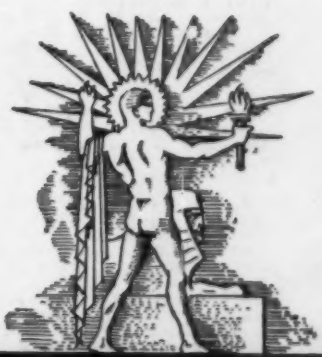
THE WEEKLY SUMMARY OF CURRENT SCIENCE•



September 18, 1937

Advance Friend!

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A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

Vol. XXXII *No. 858*

The Weekly Summary of Current Science

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Edited by WATSON DAVIS

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DO YOU KNOW?

The date is the most important crop in Iraq.

Salamanders, frogs, and toads will dry up and die unless their skins can keep moist.

Nicotine content of cigarets has little effect on their apparent strength to the smoker.

Cow's milk should not be used for babies more than 36 hours after it is pasteurized.

Two cut-leaf Japanese maples, planted by Mrs. Grover Cleveland in President Cleveland's administration, are growing in the grounds of the White House in Washington.

The Chinese soldier's umbrella used to be a joke; now it is used as clever camouflage by painting it to match landscape.

A new automatic dust and smoke meter is said to be capable of producing countable records for an exceptional range of dust concentrations.

Synthetic rubies and sapphires can be distinguished from natural gems by difference in the interior construction of the stone, made visible under a microscope.

The entire island of Capri is a bird sanctuary.

A baby's teeth begin to develop at least six months before birth.

The owl gets its name from the Cockney mispronunciation of howl.

Plague, carried by certain fleas, exists in three forms: bubonic, pneumonic, and septicemic.

Automobile license plates are clearer to read if dark letters are used on light ground, than if light letters are used on dark ground.

A popular exhibit at the Franklin Institute in Philadelphia is equipment enabling visitors to hear themselves as they sound over the telephone.

According to a French theory, certain medicines such as sedatives might be made synthetically in the chemical laboratory in gas form, so that the medicine could be taken by breathing it.

An hour of complete quiet in the home after dinner—with no music, conversation, or laughter—will not only help school children master their homework, but will prove restful to the adults, advises the medical director of one insurance company.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

ASTRONOMY

Can the waxing and waning of the giant variable stars be predicted? p. 191.

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Will Encke's comet be visible to the unaided eye? p. 184.

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Why is it proposed that a non-profit corporation hold medical patents? p. 188.

POPULATION

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PSYCHOLOGY

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Is the Fascist movement gaining ground in the United States? p. 182.

CHEMISTRY—MEDICINE

Anti-Blood Clotting Agent Clue to Thrombosis Treatment

Chemical Society Hears Reports of Heavy Nitrogen, Super-Gasolines, Method for Removing Fluorine

PREVENTION of dreaded blood clots, often fatal condition known medically as thrombosis, may now be nearer at hand. This appears from research reported by Dr. Edwin Chargaff of the College of Physicians and Surgeons, Columbia University, at the meeting of the American Chemical Society in Rochester, N. Y.

The mechanism of blood-clotting is one of science's still unsolved mysteries. Hemophilia or bleeders' disease is one result of defect in this mechanism and thrombosis is another.

By combining a small amount of sulfuric acid with a wax-like substance found in the brain, Dr. Chargaff obtained a substance which very markedly checks the clotting of blood, he reported at the meeting of the American Chemical Society. The material is called cerebroside sulfuric acid, and this is the first time it has been made in the laboratory.

Sulfuric acid is also found in heparin, the most powerful anti-blood clotting substance known. It was originally discovered in the liver by Dr. W. H. Howell of the Johns Hopkins University. In purified form, heparin injections have prevented thrombosis formation to a considerable extent in animals, Drs. C. H. Best, Arthur Charles and Campbell Cowan of the University of Toronto recently reported.

Study of the eventual practical application of Dr. Chargaff's latest discovery is now under way.

Heavy Nitrogen

First heavy hydrogen. Then heavy water. Now heavy nitrogen. That is the thumbnail research summary of the work of Prof. Harold C. Urey, Columbia University chemist who has already received the 1934 Nobel Prize in Chemistry for his investigations in the intricate field of chemical isotopes.

Heavy nitrogen, latest chapter in this scientific program, has now been separated in quantities sufficient for chemists to use it as a "tracer" in chemical experiments.

After two years of intensive research Dr. Urey and his colleagues, Dr. John R. Huffman, H. G. Thode and Marvin Fox, have so perfected their apparatus for producing heavy nitrogen that they can produce two-tenths of a gram of the precious heavy isotope of nitrogen every 24 hours. An isotope is a variety of an element which is chemically identical with the usual form but which has a slightly different weight.

In physiology heavy water molecules —composed of oxygen and hydrogen atoms in the form of the heavy hydrogen isotope—have already been used to learn how long the water is retained by the body. English experiments have shown that about 50 per cent. of the water molecules, drunk at any time, may be retained in the body for days.

Similarly the atoms of the new heavy nitrogen isotope can also be used as tracers. At the same meeting investigators from the Columbia University School of Medicine, under the direction of Assistant Prof. Rudolf Schoenheimer, reported that the heavy nitrogen helps to establish the fact that absorption of hippuric acid, or benzoylglycine, is possible directly through the intestinal walls of the body. This knowledge helps answer one question on the little understood matter of the body's chemical disposal of a waste product.

The new heavy isotope of nitrogen has an atomic weight of 15 instead of atomic weight 14 for the normal kind. Only one nitrogen atom in every 263 is of the heavy variety. The original discovery of the heavy nitrogen isotope was made in 1929 by S. M. Naude of the University of Chicago. Thus, it has taken some eight years to attain the present production, even though it may seem, at first glance, to be a very small quantity.

Super-Gasoline

Super-gasolines that four years ago were so rare they cost $30 a gallon will next year be made in a production of over 18,000,000 gallons. The government is purchasing that amount for the Army, Navy and other branches to increase the performance of airplanes in the federal air services by 30 (*Turn to Page 188*)

DR. EMMA P. CARR

CHEMISTRY

Mt. Holyoke Chemist Is First To Win Garvan Medal

FOR HER long continued and intricate investigations in the far ultraviolet wavelengths, Dr. Emma P. Carr, head of the chemistry department at Mt. Holyoke College, will be the first recipient of the Francis P. Garvan gold medal, established to honor outstanding women chemists.

Dean Frank C. Whitmore of Pennsylvania State College and president-elect of the American Chemical Society meeting here made the announcement. Actual presentation of the medal, named in honor of the president of the Chemical Foundation, will not be made until the spring meeting of the Society.

Dr. Carr's spectrographic studies are in the far ultraviolet region of the spectrum, where the ultraviolet shades off into the X-ray region. All the measurements are made in special vacuum spectrographic apparatus which was provided through funds of the National Research Council.

The Rockefeller Foundation granted financial aid which permitted Dr. Carr to study the absorption spectra of what chemists call the unsaturated hydrocarbons.

Her researches have led to important contributions to the knowledge of molecules used by the petroleum chemists.

MEDICINE

Zinc Sulfate Pontocain Solution Urged as Preventive of Polio

New Spray Recommended by Scientists at University Of Michigan Must Be Administered by Trained Person

PARENTS anxious to protect their children against infantile paralysis by the newest preventive method may have a zinc sulfate pontocain solution dropped or sprayed into the child's nose by a physician specially trained in such work.

This is the advice, given in response to an inquiry by Science Service, of Dr. Max Peet of the University of Michigan, who with Drs. Dean H. Echols and Harry J. Richter have devised a new technique for giving the solution which should make it more effective.

The solution contains one per cent zinc sulfate, one-half per cent. sodium chloride and one per cent. pontocain. The latter is a local anesthetic used because the zinc sulfate solution is irritating and may cause smarting and running of the nose and even headache. The solution was devised by Drs. E. W. Schultz and L. P. Gebhardt of Stanford University. It is said to be more effective than the alum-picric acid spray devised by Dr. Charles Armstrong of the U. S. National Institute of Health because in tests on monkeys it protected the animals for a longer period of time.

Chief difficulty with the nasal spray method of protecting against infantile paralysis is that the spray does no good unless it reaches the olfactory area, far at the back of the nose. The virus that causes infantile paralysis enters the body at this point, travelling along the nerve of smell to the nerve centers of brain and spinal cord. The spray hardens the tissues, keeping the virus from passing through.

Special Atomizer

Ordinary atomizers do not reach the olfactory area in the human nose, although they may in the monkey nose. Dr. Peet and associates have found that an atomizer with a long, thin metal spray tip will get the solution onto the olfactory area. The child's head must be tilted backward at about 45 degrees while the atomizer is used. This spray procedure must be carried out by a physician specially trained in the technic. A nose and throat specialist would know how to do it but neither parents nor the physician unfamiliar with such technic can do it safely and satisfactorily.

The method cannot be used for children under eight unless they are very cooperative. For these Dr. Peet advises dropping the solution into the child's nose when the child is lying on a table with his head hanging over the edge. The child's head should then be kept in this position for about two minutes. This method is not quite as certain to give protection but is, Dr. Peet says, the only one applicable in uncooperative children.

The zinc sulfate pontocain spray causes a little discomfort to children and more to adults.

"We are now trying different solutions to eliminate all discomfort. One is quite successful," Dr. Peet told Science Service, "but its value has not yet been determined by monkey experiments."

No Let-Up

The Middle West and New England are still in the grip of infantile paralysis, reports from state health officers to the U. S. Public Health Service show. For the week ending Sept. 4 there were 612 new cases. This figure does not include New York State exclusive of New York City. Reports from that state have not yet been received but will probably swell the total considerably above last week's figure of 621, as New York had 64 cases the previous week.

Largest number of new cases were reported from Illinois, 106. Other states with large numbers were: Ohio, 31; Michigan, 34; Indiana, 11; Wisconsin, 23; Massachusetts, 44; Maine, 19; Connecticut, 10; Colorado, 20; California, 38; Pennsylvania, 19. Texas, where the epidemic struck first, reported 36 cases. Health authorities believe the epidemic is now dying out there. Figures for the preceding two weeks in Texas were 34 last week and 51 the week of August 21.

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MEDICINE

300 to 500 Respirators Are Available Throughout U. S.

BETWEEN 300 and 500 respirators or so-called iron lungs for treatment of infantile paralysis patients are available at institutions throughout the United States. At least seven unordered respirators are on hand and could be shipped within a day or two.

The respirators are manufactured by two concerns: the Warren E. Collins Co. of Boston, Mass. (555 Huntington Avenue), and J. H. Emerson of Cambridge, Mass. (22 Cottage Park Avenue).

One of the manufacturing firms reports that orders for respirators come chiefly when there is an epidemic of infantile paralysis, despite their best efforts to interest hospitals in advance of epidemics so that they will be supplied when the need arises. During a normal year this firm's production runs from 20 to 30 respirators, while during an epidemic year it may run as high as 80, mostly within a month or two. The firm tries to anticipate epidemics and adjust its production to probable demand. This firm is now making two respirators a day to meet the demand of the present epidemic.

The price of respirators ranges from $1,000 to $2,450. The higher figure is for the orthopedic model, which is large enough to admit a patient who must have his arms in airplane splints.

The respirators work on a very simple principle. They are large tanks in which the patients rest with their heads outside the tank. A negative pressure or partial vacuum is created in the tank which forces air to be sucked into the lungs through the nose. The pressure in the tank then changes, forcing the air out again. The alternating changes in pressure go on mechanically, and take the place of the patient's breathing muscles which cannot perform this function because they have been paralyzed by the disease.

Philadelphia is the best-equipped city

in the world. The State of Maine Bureau of Health owns two which it sends in specially built trailers to any community needing them.

According to the manufacturers' records, the number of respirators in use in each state is as follows: Arkansas, 1; California, 30; Colorado, 2; Connecticut, 22; Delaware, 1; District of Columbia, 2; Georgia, 2; Illinois, 10; Indiana, 4; Iowa, 2; Kentucky, 3; Louisiana, 1; Maine, 4; Maryland, 1; Massachusetts, 30; Michigan, 5; Minnesota, 8; Missouri, 4; Montana, 1; New Hampshire, 2; New Jersey, 8; New Mexico, 1; New York, 48; Ohio, 7; Oklahoma, 3; Oregon, 1; Pennsylvania, 24; Rhode Island, 5; Tennessee, 2; Texas, 5; Utah, 2; Vermont, 5; Virginia, 2; West Virginia, 1; Washington, 2; Wisconsin, 2; in foreign countries: Canada, 6; China, 2; England, 1; France, 1; Australia, 1; the Commonwealth of the Philippines, 1.

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HORTICULTURE

Fuzzless Peach Developed After Many Years of Research

Twenty-Five Years of Crossing and Re-Crossing Ends With Fruit of Good Flavor, Shape and Texture

PEACHES with smooth, waxy skins like plums, quite free from the fuzz which many persons find objectionable, can now be grown, as a result of a quarter of a century of patient breeding work by Dr. Fred W. Hofmann, research horticulturist of the Virginia Agricultural Experiment Station.

Dr. Hofmann's long research for a high-quality peach, waxy-skinned and fuzzless, began in 1912. In that year he found, among the seedling progeny of the Greensboro peach, one tree bearing fruit with plum-like skin. He named it the plum-peach.

The smooth coat was about the only virtue possessed by the plum-peach, for the fruit was small and of no particular quality. However, a good geneticist is always willing to make a try at combining one good quality of an otherwise little-account plant with other good qualities supplied by other parent strains.

Dr. Hofmann crossed plum-peach with Elberta, and then crossed the hybrid offspring with the J. H. Hale peach, believed to be a seedling variety of Elberta. Further breeding produced, finally, the peach Dr. Hofmann was looking for: waxy-skinned, fuzzless, good-sized, round and evenly shaped. The flesh is yellowish around the pit, stone free and small, flavor and texture superior. The skin color is reddish orange yellow, with a wash of attractive dark carmine.

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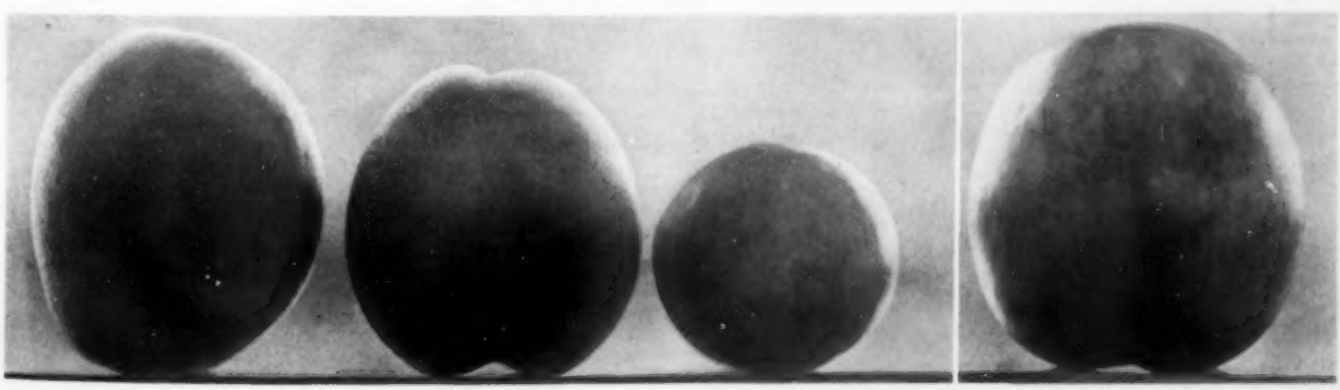
NEW PEACH'S FAMILY TREE

Reading from left to right: First, one of the parents, a standard Elberta; third, the other parent, the plum-peach "sport"; between them, the first-generation progeny. At right, the perfected progeny, a high-quality fruit with fuzzless, waxy skin.



Termites once ate up the votes in a Philippine ballot box, thereby adding to the confusion of a contested election.

PSYCHOLOGY

Upper Twenties Best Age For Many Kinds of Sports

IF YOU want to be a champion in the field of sports, you should get started early. The golden age for best achievement in sports is between the ages of 25 and 30, it was revealed when Dr. Harvey C. Lehman, of Ohio University, reported to the American Psychological Association his analysis of the ages of those at the very top of their sports.

Even golf is not an old man's game in respect to the age of championship contenders; although professional golf champions are somewhat older than the men in baseball or tennis. The professional champion is usually between 30 and 34, the amateur from 25 to 29; which gives a decade of best playing from 25 to 35 for golf players.

The best age for baseball is 28, and the years from 25 to 30 provide most of the swat kings.

In tennis, outdoor champions are younger than indoor champions, the best ages being 22 to 26 for the former and 25 to 30 for those who play inside by artificial light. This may be explained by the fact that outdoor tennis would interfere more with the hours of business and so remove some of the older players from competition, Dr. Lehman suggested.

Crack shots with rifle and pistol as well as billiards champions and automobile race winners are at their best from 25 to 29.

Bowlers and duckpin bowlers are slightly older, 30 to 34, as are also those who hold world records in billiards.

Pugilists are younger, being in their prime from 24 to 27. For cornhusking, the best age is 30 and the best periods of years from 26 to 30.

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PSYCHOLOGY

Epidemic of Fascist Ideas Should Be Battled as Disease

Psychologist Points to Gradual Change of Attitude That Occurred in Europe; Says It Can Happen Here

FASCIST ideas are gaining ground in America and the epidemic should be battled by psychological health methods parallel to those used by public health officials in fighting a disease like infantile paralysis or influenza, Dr. Goodwin Watson, of Teachers College, Columbia University, said in his address as retiring president of the Society for the Psychological Study of Social Issues, meeting at Minneapolis.

Although Americans still resent being called Fascist, the movement is steadily gaining ground, Dr. Watson indicated in summarizing psychological surveys of public opinion, and noting a parallel to what has recently happened in Germany and Spain.

In ordinary times, Dr. Watson said, Americans mostly belong in a great body of sensible middle-of-the-road opinion. But in emergencies, and during the days preceding a major social decision, this group becomes sharply divided away from a compromise attitude and into one extreme or the other.

"Did not something like this happen with reference to our entrance into the World War, to prohibition, to the New Deal, and recently, to modification of the Supreme Court?" Dr. Watson pointed out.

"I think I saw this process most clearly in Germany during 1930-32. Chancellor Bruening represented the numerous Centrist parties. At one extreme were the Communists, at the other the obstreperous but ridiculous Nazis. It seemed apparent that the great body of sensible German citizens were in neither camp. The bulk of business support and social prestige was given to a moderate middle-of-the-road position.

Strength at Extremes

"But as Germany's difficulties increased one could observe the vitality draining out of the center positions into the extremes. At each extreme were young men and women ready to lay down their lives for their cause. The middle-of-the-road group became weaker than its size warranted, because the remaining supporters of that position were past middle age, fattish, flabby, wishy-washy, lacking in conviction and drive.

"In France today it is possible to trace the outlines of a similar process. The tragic attack of united Fascist powers quickly drove Spain into a situation where groups of widely different social outlook have come to recognize basically only two possible positions. The middle class liberals of Spain who hung white towels from their windows to indicate that they still clung to what was once the mode of opinion, are few and utterly ineffective.

"Is such a change taking place in America?" Dr. Watson went on to ask. Psychological tests and surveys already conducted will provide the answer, he said. Already they show that Fascism is popular.

Other questions demanding the attention of psychologists may hold the clue to America's fate in connection with class and political wars as well as possible military encounters, he said. Will men respond more to a program which offers security or to one which suggests adventure? That is one of such questions. Is it better to rest a program, as American labor seems to be doing, upon an appeal to immediate economic interests, or is it better to appeal, as our government did with those same men in 1917, with a challenge to die for great ideals?

Students Conservative

College students are not "red"; neither are they markedly Fascist in their views, if students at the University of Minnesota can be considered a fair example, it was reported by Stuart W. Cook and Dr. Evelyn Raskin to the American Psychological Association.

Attitudes of the students were obtained by asking them to indicate their "opinions about the depression," by giving a numerical rating to each of 18

ARE YOU A FASCIST?

NATURALLY you will probably say no. But here are questions designed to reveal your secret leanings.

Dr. Goodwin Watson, of Teachers College, Columbia University, and president of the Society for the Psychological Study of Social Issues, meeting with the American Psychological Association at Minneapolis, is responsible for them.

Do You Believe:

1. That we must all, before everything else, be loyal Americans?

2. That in America classes have little significance? Any poor boy can climb the ladder of success? And only foreign agitators stir up the idea of class conflict?

3. That it is right for owners to control in accord with their wealth? And that employers and employes should work together peacefully in the public interest, like one large happy family?

4. That if labor will not accept this proper place peacefully, then labor will have to learn in bitter experience what a strong government can do to protect the rights of the neutral public?

5. That the sessions of Congress and most legislatures have ceased to be centers of creative thought and have degenerated into compromises of interests, trades, deals, back-scratching, log-rolling and other political chicanery which benefits the common people very little?

6. That what America needs is a real leader, a man loyal to the sound ideals of service and property which made America great, a man clean in his own living and ready to lay down his life for the welfare of this country?

7. That then youth would awaken and follow him, that business and professional people would again see hope for an orderly and prosperous society, that America would be ready for its re-birth?

It is in such dressed-up appeals that Fascist doctrines have their beginnings, Dr. Watson told his colleagues at the meeting.

statements to show whether they believed it true, were doubtful, or felt sure of its error. The true purpose of the questionnaire was concealed from the students intentionally because of the natural tendency of anyone to let his answers be influenced by personal prejudice.

Dislike Label

Such a prejudice against the term Fascism does exist among the students, it was clearly revealed by answers for one of the statements included in the scale. The statement, "Fascism is the form of government most capable of solving our national problems," was disagreed with by about 84 per cent., although their answers for other statements demonstrated that actually they were neither pro-Fascist nor anti-Fascist. Even the 33 students whose answers showed that they were strongest in the Fascist viewpoint had only two in their number that approved of Fascism when so labeled.

The students differed in their Fascist leanings according to their differences in scholastic interests. Nurses and members of the Reserve Officers Training Corps rated nearer to the Fascist end of the scale, with scores of plus 7.8 and plus 5.5, while students of political psychology and social psychology were toward the anti-Fascist end, with scores of minus 7.1 and minus 8.5 respectively.

Washing Makes Radicals

Small boys being forced unwillingly to wash their faces may be hotbeds of future radicalism. This conjecture is suggested by a report by Dr. Maurice H. Krout, of Chicago City Junior Colleges, to the psychology meeting.

Searching out the childhood history of two groups of young political radicals and another group of non-radicals, Dr. Krout found that one of the significant differences distinguishing the radicals was a lack of pleasant recollections connected with face-washing. Childhood punishments of the radicals more often took the form of nagging, reproach and ridicule rather than spanking.

Girl radicals reported less desire to be like their mothers; boys who turn out radicals are not the ones who admire and wish to emulate their fathers.

Men who are radicals more often talk in their sleep than do the non-radicals with whom they were compared. Women radicals talk in their sleep less often.

Radicals have a less optimistic attitude toward life.

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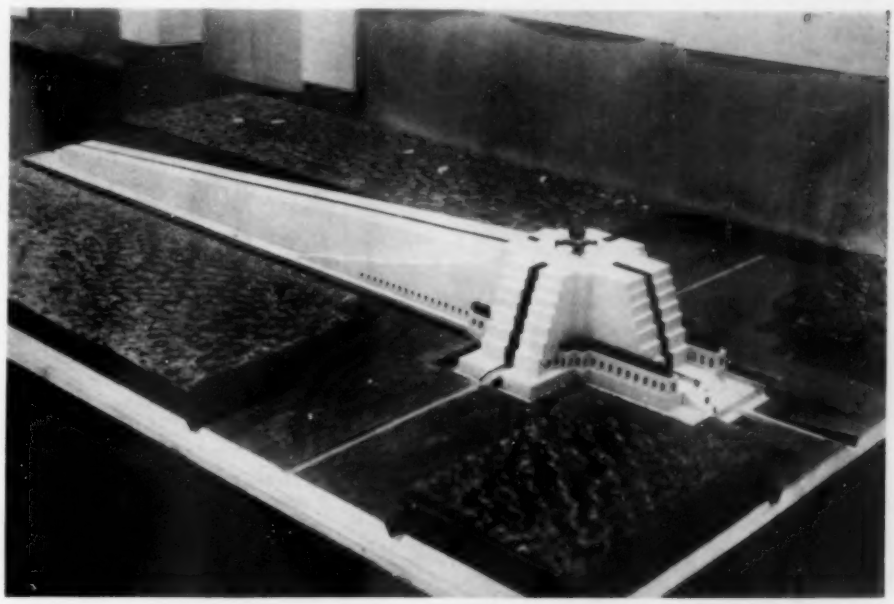

INTERNATIONAL MEMORIAL

This model shows the appearance of the 1,000-foot shining white cross to be constructed in the West Indies as a memorial to Columbus, whose bones may be removed from the Cathedral vault where they now lie to a tomb under the cross. A powerful beacon will be mounted on the cross to guide ships and airliners in Caribbean waters.

AVIATION—HISTORY

Columbus and Aviation Linked in Memorial Beacon

CHRISTOPHER Columbus and aviation!

They were 400 years apart in history. But the twentieth century wants to bring them together in an international Columbus memorial.

The memorial stands ready on paper. News readers may recall the design, which attracted wide interest a few years ago when it was chosen. An international competition was held, in the quest for an outstanding design, and a young English architect named J. L. Gleave won, with a plan for a monumental structure combining the symbolic and the practical.

It will be a recumbent cross, 1,000 feet long, shining white. It will be constructed in the city of the West Indies where Columbus' bones already rest — Trujillo City, capital of the Dominican Republic. The memorial planners hope to have Columbus' remains transferred from their present tomb in the cathedral to this new tomb under the center of the shining cross. That might take persuasion. The few bones left of the great navigator are so treasured at the cathedral that three keys guard the vault, and it takes combined consent of state officials, archbishop, and curator—who hold the three keys—to unlock the vault.

Yet, we may imagine the new tomb would please Columbus' own adventure-loving heart. For surmounting the cross will be a powerful beacon, doing lighthouse duty, to guide ships at sea and also airliners crossing the Caribbean. And the memorial grounds are to be a great Pan American park and an airplane landing field.

To arouse renewed interest in this project, four airplanes will rise from this field October 12 and fly on a 20,000 mile tour, touching every republic in North and South America. If all goes well, the lighthouse cross will be dedicated 450 years from our discovery date —October 12, 1942.

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The first radio broadcasting station in Greece is now being built in Athens.

ENTOMOLOGY

Explosions of Firecrackers Make Fireflies Show Off

FIREFLIES can be stimulated into very greatly increased display of their animated "fireworks" by nearby explosions, Dr. Rudolf Ruedemann of the New York State Museum reports. (*Science*, Sept. 4)

On the evening of July 4, Dr. Ruedemann states, he was looking out over his lawn, where about half-a-dozen fireflies were leisurely flashing. Some boys, who had been setting off ordinary small firecrackers, suddenly switched to the much noisier giant cannoncrackers. Instantly the number of firefly flashes increased eight- or tenfold in number, the rate of flashing speeded up to more than double, and the insects kept down very close to the ground. As soon as the loud explosions stopped, the firefly display went dark, with the exception of three insects that rose into the shrubbery.

The flashing of the particular kind of firefly noted by Dr. Ruedemann is often considered to be a warning-response to threatened danger—for these fireflies are refused as inedible by bats and other night predators. Dr. Ruedemann thinks that they may have given the characteristic danger-reaction to the artificial stimulus of the cannoncracker explosions.

Science News Letter, September 18, 1937

ENGINEERING

Housing Still Backward Art; Research Study Would Help

WHY housing is a backward industry, doing things mostly the way our fathers did them, despite the rosy dreams of modern and ultra-modern planners, is a puzzling situation.

A prefabricated house, requiring little time and trouble for erection on the selected site, does not seem an entirely utopian idea. Yet such a house produced at a price lower than the conventional and in large numbers has not arrived.

In a Massachusetts Institute of Technology conference, John Ely Burchard, vice-president of Bemis Industries and housing authority, laid part of the blame on the fact that almost every one thinks he can design a house. Such unskilled, inexpert attempts, plus talk about wholly impractical radical structures that never get as far as foundations, disillusion a hopeful public.

As for those seriously pioneering in prefabrication, Mr. Burchard feels that the prefabricator has all too often been guilty of complicating his already involved problem with speculation over some production method still in embryo or indeed not even conceived. High-cost synthetics are used when more conventional materials now used widely might have served. Field operations are not fast and cheap and too much of the supposedly factory-made dwelling is still assembled at the site.

Despite the shortcomings there is now considerable prefabrication in all house elements except structure and finish. Windows, doors, furnaces, and other parts roll off mass production lines. If the various makers of materials and equipment could get together and release for use all their experimental developments, house building would be changed greatly in a season.

One great lack is research. Mr. Burchard believes that five million dollars used by the government on fundamental and practical research would be more useful than a five billion dollar a year house building program.

Science News Letter, September 18, 1937

ASTRONOMY

Encke's Comet Resighted On Its Triennial Visit

ENCKE'S COMET, one of the oldest and best known, has been "rediscovered" by Dr. H. M. Jeffers of Lick Observatory, Calif., who reported his find to Harvard Observatory as the distribution center for astronomical discoveries.

The comet is now making its fortieth trip to earth since its discovery in 1786. It has a period of about three and a third years and has been seen every trip since 1819.

According to Dr. Jetters, the comet is extremely faint, about the eighteenth magnitude, beyond the range of any telescope usable by the human eye but is fairly easily photographed. It is growing steadily brighter and should reach its peak brilliance just within the range of the naked eye, about Christmas. Astronomers doubt they will be able to see it then, however, for it will be very close to the sun. At its nearest approach to earth it will be about 25,000,000 miles away, relatively close. This will be during most of November. A small comet, it is now in the constellation Aries and is expected to move across Andromeda, Lacerta and Cygnus. It has no tail yet but should develop a stubby one early in December.

Science News Letter, September 18, 1937

IN SCIE

ETHNOLOGY

Cannibals? Ridiculous! Just a Traveler's Myth

"CANNIBALISM is a pure traveler's myth."

This statement, which will surprise many people, comes from Prof. M. F. Ashley-Montagu, anthropologist of New York University.

Prof. Ashley-Montagu has grown weary of what he considers unfair tactics in accusing certain inhabitants of the earth of cannibalism. It is particularly unfair, he feels, to call prehistoric men this hard name because they cannot possibly arise to sue for libel.

What happens, as he points out in a report to the journal Science, is this:

When charred human bones are found at some campfire that burned out thousands of years ago in the Old Stone Age, it is generally assumed that cannibals feasted there. And if the human bones are cracked, indicating that a human being extracted marrow, why, that settles all doubt. These folk were cannibals, which suggests to most minds that they had the low habit of gobbling up other humans as unconcernedly as they would eat elephant steak.

But, Prof. Ashley-Montagu does not find such evidence convincing, and he declares that it would not stand up in any Primate court.

He points out that, in modern times, starving primitives—and even civilized men—have been known to kill and eat their young. But no one would call these people cannibals. He also points out that many primitive tribes do occasionally consume certain parts of the human body for ritual purposes.

"But," he adds emphatically, "no people of whom we have any knowledge makes any habit of cannibalism."

The argument sums up to this: Men, even civilized men, have been known to eat their fellows, undeniably. But Prof. Ashley-Montagu would have us relegate to fairy-tale realm those ghoulish pictures of savages gleefully dancing around a pot of missionary stew for an ordinary Thursday night meal.

Science News Letter, September 18, 1937

E FIELDS

PSYCHOLOGY

Back-Seat Advice Causes More Cautious Driving

BACK seat drivers put on the brakes! That is, motor vehicles with passengers do not travel as fast as those where the driver is alone. This finding has resulted from a survey made by the Connecticut State Highway Department, which also discloses that tourists travel faster than the home folks on the highways and that the farther they are from home the faster they go.

It was found that the average speed for Connecticut drivers was about 38 miles an hour. Visitors from neighboring Massachusetts averaged about 40 miles an hour while New York state cars averaged 41 miles an hour. Motor vehicles from mid-western states averaged nearly 45 miles an hour in the study reported.

Science News Letter, September 18, 1937

HYGIENE

Don't Fight That Tired Feeling: Rest and Relax

FATIGUE is something most persons in this strenuous, struggling world resent and fight against. Fatigue should, however, be welcomed as a friend giving a first-class safety warning. The person who feels tired all the time should find out why he is tired and take steps to dispel the cause.

Rest and relaxation are probably called for. Dr. Conrad S. Sommer, medical director of the Illinois Society for Mental Hygiene, says that most of us need to reorganize our lives. Fatigue comes to many people simply because they are trying to do too much—and often for not very good reasons. A yearly vacation, an occasional week-end of relaxation and at least one evening a week of really relaxing recreation are prescribed by Dr. Sommer as antidotes for that tired feeling.

Besides overexertion, either mental or physical, there are a number of other causes of fatigue. The weather may make anyone feel tired. This may range from the not unpleasant lassitude of spring fever to the utter exhaustion experienced on a hot humid day in midsummer.

Not much can be done about the weather, but eyestrain, strain from exposure to continuous noise, weakened arches, poor posture, hernia, and strain or relaxation of muscles, tendons and ligaments that support important body organs are important causes of fatigue that can be remedied. A physician's aid is indicated in these cases.

More subtle reasons for feeling tired are to be found in the field of personal relations. The complex, competitive manner of modern life makes it doubly hard to get along with people. To this strain is often added the stress of internal conflict, than which nothing is more wearing. It is less tiring and better for mental health to recognize the causes of such inner conflict than to try to bury or ignore them.

Science News Letter, September 18, 1937

POPULATION

Fewer Young People Today Reflect World War Deaths

GERMANY'S current cannon-fodder crop is proving unsatisfactory to military authorities. Youths reaching the age of twenty in Germany during 1937 will number only about 315,000. In 1932 the number of possible recruits was 644,000. Not until 1940 will the count rise as high as 639,000, and after that it will decline, reaching a low of 431,000 in 1953.

Subtract 20 from these numbers, and meaningful shadows appear. Twenty year ago this year, all of Germany's potential fathers were in the trenches—and hundreds of thousands of them were in their graves. Twenty years before 1932, the war had not started. Twenty years before 1940, post-war weddings had reached their peak. Twenty years before 1953, economic crisis was having its strangling effect on German families.

The German figures also include some on foreign lands, for purposes of comparison. The number of "new" twenty-year-olds in Poland this year exceeds that of France; Italy is just behind Germany. For 20 years Japan has had 700,000 "new" twenty-year-olds eligible for service with the colors, but the comparable number in the USSR is at least twice that, and may be as high as two million.

Science News Letter, September 18, 1937

OCEANOGRAPHY

Ocean Currents Play Odd Tricks on Mariners

QUEER pranks and conditions played by localized ocean current rips have been reported to the Hydrographic Office of the U. S. Navy.

While on a voyage from Balboa, C. Z., to San Diego, Calif., recently, the American steamer Jefferson Myers reported a current rip directly across its path that had water with a temperature of 84 degrees Fahrenheit and deep blue in color, on its south side. On the north side, however, the water was dark green and had a temperature of only 68 degrees. Similarly when the ship passed over the rip the air temperature changed from 84 to 68 degrees.

The British steamer Pentridge Hill reports, while on a voyage from Rotterdam to Rio de la Plata, South America, a current rip in the South Atlantic that, for five miles of length, has the appearance of breakers in very shallow water.

A current rip was described near the equator in the South Atlantic by the American vessel Charles Pratt, which turned the ship's course off five degrees, as set by a gyro pilot.

The U. S. S. Norwhal, cruising in the Pacific between Hawaii and California, encountered a rip which, while not retarding the vessel, had the unusual appearance of an area of intermittent streaks of foam and spots of water which seemed to "boil," as does water over a slow-turning but deeply-submerged propeller.

Science News Letter, September 18, 1937

SEISMOLOGY

Quake Shakes Sea Bottom On "Other End" of Earth

A STRONG earthquake shook the bottom of the Pacific Ocean near the Kermadec Islands, about 800 miles northeast of Wellington, New Zealand, on Wednesday, Sept. 1. Location of the epicenter was determined by the U. S. Coast and Geodetic Survey.

The epicenter was in approximately 31 degrees south latitude, 179 degrees west longitude. Time of origin was 8.38.9 p. m., New Zealand time. Stations reporting were those of the U. S. Coast and Geodetic Survey at San Juan, P. R., Honolulu, H. T., and Sitka, Alaska, and those of the Jesuit Seismological Association at Fordham University, New York City, and Weston College, Mass.

Science News Letter, September 18, 1937

ENTOMOLOGY

Without Benefit of Insects

A World Bereft of These Small Creatures Would Miss Many of Man's Best Friends as Well as Foes

By DR. FRANK THONE

DROWSY Sunday afternoon. The hammock under the apple tree looks inviting. May be something worth reading in this magazine. . . Let's see . . . Something here about bugs . . . mm . . .

You have half decided to take a little snooze instead of going on reading, when your ankle begins to itch: some adventurous mosquito has decided not to wait until dusk. Then a bumblebee zips by, doesn't like something about you, zips back again, a couple of times. And an acrobatic caterpillar slides down a cable of his own making, to drop right on the place where your hair used to be.

Confound all insects anyway! Whatever were they invented for, the crawling, biting, stinging nuisances? World might be a place halfway fit to live in, if the whole lot of them could be wiped out.

And science says, at that, they may wipe us out instead. Well, let 'em. If there get to be many more of the cussed things about, the world won't be fit to live in, anyway. The doggone pests!!

So you give up the hammock and go back to the safe fortification of the screened-in porch.

But would you be happy if all insects were wiped out? It's even a question whether you would be there at all. For though some insects pester man and loot his granaries and warehouses, other insects perform a long list of services for him. So many services indeed that without the insects existence for man and the larger animals would be difficult, if not impossible.

Destroying Friends

And are the insects really threatening to wipe us out? Isn't there a chance that the tables may be turned, and we are in danger of wiping out some of the best friends we have in the insect world?

At least one prominent entomologist thinks there is a chance of that calamity happening. She is Dr. Edith M. Patch, who has just retired as head of the department of entomology at the University of Maine, after more than a generation of service in her science, and honored widely by her colleagues. She has raised the question of what a world "without benefit of insects" would be like.

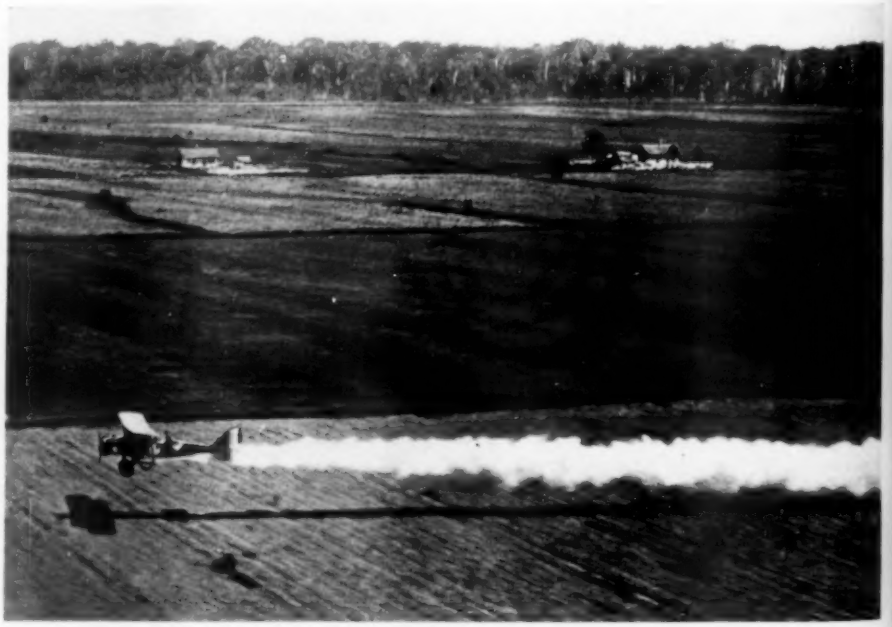
Of course, Dr. Patch has no idea that all the insects of the world could be completely exterminated. Whales and elephants can be exterminated, but not insects. But even now the warfare we wage on harmful insects is killing uncountable millions of "good bugs" who happen to be occupying the same territory. It is just like bombing or burning a city occupied by the enemy—and also by friendly non-combants, women, and children. Dr. Patch adduces plenty of witnesses from the ranks of entomologists to back up her own testimony.

Chief sufferer from spraying of fruit orchards seems to be our old friend the honeybee. The situation is ironic. Orchards must be sprayed to keep down the codling moth. The codling moth is the parent of that worm (or half-a-worm) that you find in your apple. If orchards weren't sprayed, codling moth larvae would worm their way into all apples, all pears, apricots, peaches, almonds. So sprayers go through the orchard several times, dousing blossoms with arsenicals, for it is during and after blossom time that Madam Codling-moth comes to lay her eggs.

But bees, coming on their beneficial errands of pollen-transfer and honey-gathering, drink death with the nectar. Some never get home. Others reach the hive, but become paralyzed and die. The hive becomes too weak to feed its young, to resist disease, to defend itself against enemies.

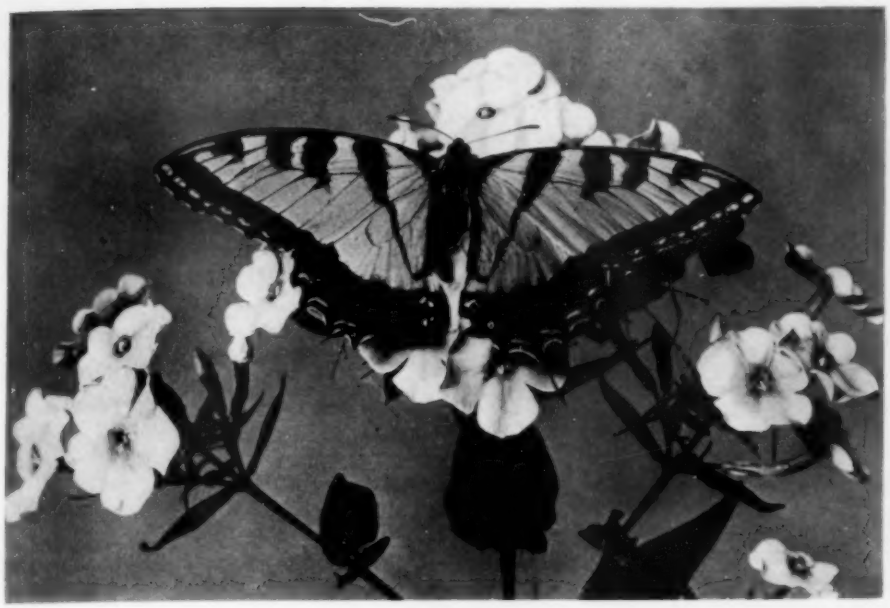
In one part of the Pacific Northwest there was a regular tug-of-war between the spraying orchardists and the anti-spraying beekeepers. The orchardists insisted on spraying; they said they had to. The beekeepers' bees began to die by millions. So the beekeepers pulled out of the orchard country and sought flowering pastures new. It wasn't just a sit-down strike. It was a walkout, with removal of an essential part of the apple-making machinery, the pollen-distributing bees.

Of course honeybees are not the only pollen-carriers for fruit trees, so orchard-



DEATH IS NO CHOOSER

Upon just as well as unjust, in the insect world, falls death in the poison cloud from the airplane as it zooms across this cottonfield, fighting weevil or bollworm primarily but killing all winged life indiscriminately.



BEAUTY EMERGENT

Big green caterpillars with hairs and horns and humps on them are "squirmy" things to see, and often eat a lot of foliage, but if they escape poisoning they may turn into beautiful big butterflies and moths, useful in pollinating many flowers for which ordinary bees are not large enough.

ists may be able to thrive for a long time without them, depending on the assistance of the wild solitary bees, and other less important insects that visit fruit blooms. But it is quite likely that the spray poisons get them, too, so the dilemma is not solved, only postponed for a time.

Even more wholesale destruction is visited on insects when airplanes are used for spreading poison dusts over cottonfields to combat bollworm and weevil, and over forests to control gipsy and browntail moths. The areas covered are much larger, and the insect life, in the forests at least, forms a much more complex community.

Even Birds Affected

Furthermore, in such a wholesale spreading of poison by such an indiscriminate blunderbuss as an airplane, a good deal of the lethal dust usually drifts into the surrounding woods and brushland where it is not needed but where it kills hosts of insects and their larvae that are the food of nesting birds. In this kind of warfare the innocent bystanders certainly get it in the neck with a vengeance!

Dr. Patch does not pretend to know the answer. The war against pests must unquestionably go on, she readily grants. But, she adds, "Perhaps no agricultural situation has ever presented a more serious dilemma. On the one hand, if we do not destroy enough of certain insects, they may ruin some of our crops. On the other hand, if we proceed to destroy too many insects, we shall have almost no crops at all except such as are wind-pollinated."

For Pleasure

Dr. Patch champions insects not only for the material good they do us but for the pleasure and mental satisfaction we might get from a better knowledge of them.

"If we look backward a few centuries," she reminds us, "we recall that the entomological fellowship then numbered among its members priests—men with leisure for contemplation of the wonders they beheld.

"I have in mind one ancient book the pages of which are filled with richly tinted pictures lovingly painted by hand. And in the introduction the author speaks of his subject with reverence. He has been led, he says, to portray the marvels and beauties of insects 'for the glorification of God'—that men may the better appreciate the wonders of creation with which they are surrounded."

Then she looks forward to the year 2000, and imagines the meetings of some learned societies of that future day. By then the indiscriminate extermination will have done much of its deadly work, and many species will have gone to join auk and dodo. Conservationists will then be much concerned over means to insure the survival of useful and beautiful insect species left in the world.

Dr. Patch takes us to visit a committee meeting of scientists concerned with the relations between plants and insects, the Phyto-Entomological Society:

Future Breeding Places

"Each member has before him an enonomic botany book to which he refers for the names of all the insect-pollinated flowers listed, together with the names of all insects known to pollinate each species. After noting those insects that are becoming too rare to be efficient, the committee recommends that favorable breeding places be provided for these insects throughout the regions where their services are needed, and that every effort be made to increase their numbers. These recommendations are to be published and distributed to all growers of the plants concerned."

Dr. Patch carries the report of the committee to quarters where it means something in terms of dollars and cents. The growers of seeds for garden and truck vegetables report that since they have for many years kept hive bees for pollination purposes, they have no difficulty in supplying seeds of vegetables pollinated by these insects except in those years when foulbrood or some other bee disease gets an unexpected start and interrupts the activities of the bees at a critical time. Some concern is expressed because epidemics of honeybee diseases seem to be on the increase.

Plants Extinct

Less cheerful is the picture painted for the nurserymen of 2000 A. D. "They report that they have had to remove from their catalogs the names of plants pollinated by bumblebees and hawkmoths. Indeed, the supply of these plants is so limited that only a few hand-pollinated specimens are being held, from year to year, in their nursery gardens in the hope that they can establish bumblebees and hawkmoth preserves nearby in order to keep these plants from absolute extinction. They hope by these means to increase certain favorites such as petunias, snapdragons, and some of the orchids, sufficiently to warrant offering them again for sale."

Wildlife conservators even today are propagating food plants for waterfowl and upland game birds on already existing refuges—wild rice and other grasses for the ducks and geese, berry-bearing shrubs for quail and grouse. Dr. Patch foresees a day when men will propagate insect food for the songbirds, whose

young thrive best on certain kinds of caterpillars. It may even be necessary to import suitable species of moths and butterflies into a thoroughly-sprayed, caterpillarless land, and keep them in special bird-and-insect preserves.

Just as presidential proclamations now establish new national parks and federal game sanctuaries, the New Deal of 2000 A. D. may be expected to act for the preservation of insects.

"In the year 2000, the President of the United States issues a significant proclamation. In order to provide suitable conditions for native and introduced pollinating insects, the Government claims areas of land at few-mile intervals in rural districts throughout the country. These areas will be maintained as Insect Gardens, under the direction of government entomologists.

Caterpillar Plants

"Milkweed will be grown for larvae of monarch butterflies, plants of the parsley family for black swallowtails, and so on. Woodbine, purslane, and other suitable food will be grown for the larvae of the more important sphinx moths.

"No caterpillars are to be killed in these gardens. If one district becomes overpopulated, the surplus material will be taken to another district where these same insects are not abundant enough.

"Especial attention will be given to introducing solitary wild bees into localities from which they have disappeared. European species, if available, will be purchased to increase the supply. Colonies of native bumblebees will be placed in favorable habitats. European species, if available, will be purchased to increase the supply. The emphasis on solitary bees and bumblebees will be necessary because of frequent epidemics of hive-bee diseases that reduce their usefulness when they are most needed."

Insects for Posterity

It may seem fantastic to think of a world careful of its insects, and taking such means to coddle them. But remember, we utterly exterminated the passenger pigeon, and saved bison and pronghorn just in the nick of time. So while you go on massacring the bad insects, better try to be a little kinder to the good ones. Your grandchildren may want them.

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Science News Letter, September 18, 1937

MEDICINE

Medical Association Offers To Hold Medical Patents

Reversal of Policy Made Necessary to Prevent Unscrupulous Commercial Exploitation, Editor Says

UPSETTING 23 years of policy, the American Medical Association has admitted indirectly that patents on medical discoveries are needed.

Dr. Morris Fishbein, editor of the *Journal of the American Medical Association*, speaking before the American Chemical Society meeting at Rochester, N. Y., advocated the setting up of a non-profit holding corporation to administer patents in the medical and health fields.

The new suggestion of the powerful and conservative A.M.A. includes suitable royalties to the discoverers. This is a distinct change from the 1914 resolution of the A.M.A. which permitted it to accept patents. Under this resolution neither the A.M.A. nor the patentees would receive remuneration for the patents.

In effect, the physicians now recognize that the profit motive in the development of research discoveries has an important function in present day American society.

Under its 1914 resolution, said Dr. Fishbein, the American Medical Association never accepted any medical patents and it did not formulate any plan for the administration and control of patents in the medical field.

The new proposal advanced by the A.M.A. spokesman is a modern compromise with the rigid principles of medical ethics which state distinctly "it is unprofessional to receive remuneration from patents for surgical instruments or medicines."

The new suggestion for the control of medical patents, declared Dr. Fishbein, seems needed because of the diversified methods which university and non-profit research foundation laboratories have been compelled to take in order to protect their discoveries from unscrupulous commercial exploitation.

Dr. Fishbein cited the discovery, patenting and control of insulin, used in treating diabetes, as an example of desirable control of medical discovery. The arguments in the patent field over the production of vitamin D and vitamin D products are illustrative of the troubles that may arise, added Dr. Fishbein in contrast. He continued:

"The sun in the sky should be freely available to all who wish to use it. Yet it has been hinted that there are some concerned with patents on vitamin D who would even inhibit investigators from experimenting with the sun."

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From Page 179

per cent. Bombing planes that now could carry 2,000 pounds of bombs will be enabled to carry 3,000 pounds of their deadly missiles with the new 100 octane number fuels.

To the meeting of the American Chemical Society, Dr. Gustav Egloff of the Universal Oil Products Company reported the potentialities of these new fuels which the chemist is developing.

If the engines of the great China Clipper were designed to use these newest fuels the increased payload possible would be worth $2,000 on each single trip between Alameda and Honolulu, said Dr. Egloff.

Iso-octane is a synthetic fuel that is improved in its burning characteristics over any thing which nature produces. Normal octane, said Dr. Egloff, burns too rapidly in a motor of a modern automobile or airplane, because its eight carbon atoms are strung out in line. During combustion in the cylinder of a motor the flame rushes rapidly down this straight line of atoms and produces the engine knock known so well to motorists.

What the chemists have done with the new iso-octane fuels is to introduce a chemical "maze" through which the flame spreads more slowly, as though bewildered. The maze in reality consists of carbon atoms branching off from the main chain. The slower burning yields less engine knock at higher compression in the cylinders of a motor. And higher compression means more power per gallon of fuel. While this added power is valuable for automobiles it is most vital

to increase the payload of airplanes whether in passengers, freight, or bombs.

Chemical Removes Fluorine

Traces of fluorine compounds, found in drinking water in the Midwest and responsible for the mottled coloring of children's teeth, can be removed by use of a chemical, tri-calcium phosphate, Dr. Howard Adler and George Klein of the Victor Chemical Works revealed. Tri-calcium phosphate, dried to a powder from a watery gelatin, absorbs fluorine compounds readily, Dr. Adler explained. Ten pounds of the substance will remove sufficient fluorine from 560 gallons of water to render the small impurity harmless.

Chemical Halts Rose Pest

Red spider, a pest to the rose fancier and a menace to the professional flower grower, can be controlled effectively by a new derivative of the chemical cyclohexylamine, T. S. Carswell and H. L. Morrill of the Monsanto Chemical Company told the Society.

Cyclohexylamine, which has been known in the laboratory since 1893, is now being produced commercially in the United States, they reported in a survey of the uses of the substance.

Destructive influence of the pest, which attacks a wide variety of hothouse plants as well as roses, is particularly felt in the greenhouse, where a single bench of roses frequently represents an investment of $20,000.

Science News Letter, September 18, 1937

Great Salt Lake in Utah is nine and a half feet lower in elevation now than it was in 1924.

BULBS

TO SPREAD THE fame of our bulbs everywhere, we will send you FREE a nice assortment of HYACINTHS, TULIPS, NARCISSI, IRISES, CROCUS, etc., 350 bulbs in all, guaranteed to flower next spring and summer. It suffices to send us for postage, packing, etc., a one-dollar note by registered letter, printing your name and address plainly. Please do not send coins or stamps. Postage paid all over the world without increase in price. Please mention SCIENCE NEWS LETTER when ordering.

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BOTANY

NATURE RAMBLINGS by Frank Thone

Names From the Armory

ODD, how many names for use in their peaceful trade botanists have drawn from warlike armories!

Leaves especially seem to have struck the military streak in the scientific imagination. There are hastate leaves, from the Latin hasta, a spear; lanceolate leaves, obviously from the word lance; sagittate leaves, from sagitta, an arrow; gladiate leaves, from the word for a sword; peltate, from the name for a shield; umbonate, from the umbo or boss in the middle of a shield.

Other shapes in botany, applied more often perhaps to shapes of flowers and fruits, are pileate, from pilum, a javelin; galeate, meaning helmet-shaped; clavate, from the term for a club; arcuate, meaning bow-shaped or bow-like.

Naval terms have been drafted into botanical service, too: the parts of an orthodox flower of the pea or bean family are known as banner, wings, and keel. And naviculate, shaped like a little boat, is applied to a certain type of seed-pod.

Some of the commonest terms of plant anatomy are military borrowings. We speak of leaves as arranged in ranks on branches; certain small outgrowths that protect other plant organs are called scutella, or little shields. Many flowers have spurs, and irises at least carry standards. There are guard-cells on the surfaces of leaves, palisade cells beneath.

Common and Latin names alike give Army names to whole plants: gladiolus means a little sword, there is a mushroom known as clavaria or club-fungus, science and common speech agree on the arrowiness of sagittaria or arrowleaf. And there are spearmint, arrowroot, devil's club, knife-bean, shield-fern, club-moss, and blades of grass.

It is interesting to note, however, that almost all of these terms date from ancient times, before the invention of firearms. Only a few plants, and those from lands unknown in classic days, bear such names as cannonball tree and Spanish bayonets. Curious, too, that the military names used are all of hand weapons; catapult and ballista and batteringram seem to have been forgotten.

One wonders what might have come to pass if there had been any women botanists in the old days when names were becoming established. Would we have had fewer names from the armory and more from the household, like fusiform or spindle-shaped, plumose or feathery?

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ENGINEERING

Engineers Invent New Word; A "Vodas" Distorts Voice

IF ANY READERS are now going through the process of learning one new word a day to increase their vocabulary, the word "vodas" is recommended. It won't be found in any dictionary now in existence and is as new as today's newspaper.

To save playing the old game of asking "animal, vegetable or mineral?" one should hasten to add that vodas is an instrument through which the electrical impulses of your voice must pass when, and if, you next talk by trans-Atlantic radio telephone.

The vodas does many things to your voice, including the creation of an artificial stammer. And it can turn your normal voice volume into a roar.

Vodas is a newly coined word composed of the first letter of each word in the following phrase: "voice-operated device anti-singing." A vodas, S. B. Wright

The SEX TECHNIQUE IN MARRIAGE • By I. E. Hutton, M. D.

"Dr. Ira Wile describes the book as a clear, succinct, non-emotional, authoritative and conservative exposition of the practical factors involved in making marriage successful on the sexual level. That describes the book exactly . . . It is primarily concerned with the conduct of the honeymoon and with the technic of the sexual performance."

—*Dr. Morris Fishbein, Editor Journal American Medical Assn., in Hygeia.*

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of the Bell Telephone Laboratories of New York explains, represents the radio and electrical engineers' answer to the unique and intricate problems which arise at the links between land telephone lines and their wireless trans-oceanic counterparts. Not the least of these problems is the fact that radio noise is much more severe than wired telephone noise. This makes radio transmitter power capacity large and expensive so that it is most economical to control the speech volumes to make them load fully the radio transmitter. When fully loaded a radio transmitter minimizes the effect of noise.

Best results on combined radio and wire telephone circuits could be achieved if first one speaker said all he had to say and then allowed the other to talk. Actually, in ordinary conversation there is a quick interchange of talk which is disastrous for good reception if both speakers want to talk at once. And that is where the "stammer" mechanism of the vodas comes in. It causes an almost imperceptible delay before the circuits will accept the voice of Mr. A, for example, after Mrs. A finishes telling him how little Johnny is. A one-sixth of a second lag is all the electrical vodas needs to handle the conversation in normal fashion.

Modern radio telephony requires a man in a control room to handle the two voices speaking, in a fashion somewhat like the operator in a radio control room in a broadcasting station. The control man's job includes adjusting the receiving relays to the particular amount of noise existing; adjusting the transmitting and speech volumes properly; selecting the proper hangover or delay time for the two voices and perhaps increasing the sensitivity of the transmitting side of the vodas for soft voices.

Science News Letter, September 18, 1937

ASTRONOMY

Sun Gives Less Light Than Supposed, Moon Gives More

Harvard Astronomers Find That Old Sol Is Weakling But Lunar Size and Reflecting Power Was Understated

ARE YOU still nursing a summer sunburn? Console yourself: it might be worse, if our sun were as husky as other stars in the same class. Actually, it's a comparative weakling. It gives off only about seven-tenths of the radiation it should, Harvard College Observatory scientists have just announced.

But on the other hand, if the full moon "does things" to you, science has an explanation for that, too: the moon has been found to be slightly brighter than has heretofore been believed.

Both these facts came out when Dr. William A. Calder at the Harvard College Observatory made pioneer determinations of the brightness of the two bodies with the now-famous electric eye or photocell.

Harvard astronomers said that the research gives the first indications they have had that the sun is below normal. An exact measurement of the sun's brightness is highly important to science because the sun is used as a standard for measuring and describing the energy emission and luminosity of more distant stellar bodies.

The new value obtained for the sun's magnitude by Dr. Calder is minus 26.32, four-tenths of a magnitude dimmer than the value derived by Dr. Henry Norris Russell of Princeton University in 1916 and used by astronomers all over the world since that time. Astronomically speaking, this is a large correction, indicating that the sun emits thirty per cent. less radiation than is normal for a star of its type. The sun is astronomically classified as a "G zero dwarf" star, signifying one predominantly yellow and of relatively low brilliance.

Dr. Calder urges, however, that his new value "be taken with caution" because of the important implications of his results.

The scientist's new value for the luminosity of the moon is also considered highly significant, and Harvard astronomers said his finding of a greater reflecting power than was suspected "has probably unsnarled one of the minor mysteries of this body."

Previous research had indicated that the moon's surface was made up of a very dark material with low reflecting power, technically known as an albedo of .07. Other investigators have held that the surface was composed of rocks of more normal reflecting power. Dr. Calder's work supports this latter view, giving the surface of the moon an albedo of .12, close to that of ordinary rocks.

For the moon's magnitude, Dr. Calder has determined the figure minus 12.66, slightly higher than the generally accepted value of minus 12.55. He has also found that the sun and moon are of virtually the same color, and that the moon is not more reddish as has been suggested.

The new values were obtained by

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●RADIO

September 21, 4:15 p. m., E.S.T.

WAR ON WEEDS—Dr. Earl Bressman of the U. S. Department of Agriculture.

September 28, 5:15 p. m., E.S.T.

DISEASES OUTSIDE OUR DOOR—Dr. C. V. Akin, Chief Quarantine Officer for the Port of New York.

In the Science Service series of radio discussions over the Columbia Broadcasting System.

comparing the sun's light with that given off by first magnitude stars, among the brightest in the heavens, but only about a hundred billionth the brightness of the sun as viewed from the earth. Both were compared with a standard lamp, the sun in the daytime and the stars at night, with the lamp 500 feet away. Stars used were Vega, in the constellation Lyra, Deneb in the Swan, and Capella in the Charioteer. Measurements of the light of the full moon were conducted in a very similar manner.

Science News Letter, September 18, 1937

MEDICINE

Match Inhaler Invented For Treatment of Colds

A FRICTION match for treating colds has been invented by Alfred Schmid of Berlin-Dahlem, reports the American chemical journal "Industrial and Engineering Chemistry." The device consists of a small glass rod coated with absorptive charcoal which contains a carefully measured amount of iodine. The tip of the match is covered with an incandescent mantle of easily ignited iron. When this covering is ignited, iodine vapor is created and can be inhaled directly. The inhaler can be carried in the pocket.

Science News Letter, September 18, 1937

Cherries, unlike many fruits, stop developing in color and flavor as soon as they are picked.

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ASTRONOMY

Giant Variable Stars Vary Entirely By Laws of Chance

Statistical Analysis of Cycles of 400 Long-Period Variables Explains Why Blinks Were Unpredictable

SCIENCE'S many futile attempts to predict the changes in brightness of the heavens' blinking giants, the long-period variable stars, have been ended by the explanation of two Harvard astronomers that only the law of chance governs their irregular flarings and fadings.

Under this circumstance, say Leon Campbell and Dr. Theodore E. Sterne of the Harvard Observatory staff, no mathematician can possibly anticipate the irregular changes of brilliance. Their research has also eliminated the belief of some astronomers that there have been important and widespread evolutionary changes of increase of diminution of cycle among these long-period variables.

The findings are the result of a two-year statistical analysis of the cycles of nearly 400 long-period variable stars, some of them with observation records running back more than a century. These stars are a class of gigantic red suns which flare and fade in brilliance in periods ranging from several weeks to several months. When at their brightest they may be as much as ten thousand times more brilliant than when they are dimmest.

Early studies of these stars told astronomers that their cycles are not exactly periodic and that the irregularities are too large to be accounted for as observational errors, but astronomers have never been able to devise any formula that would enable them to predict the cyclical alterations. Some mathematical expressions have been obtained to cover a given series of data but these have almost invariably been away off in later observations.

In explanation, Mr. Campbell and Dr. Sterne say that "most of the irregularities of period can be attributed to a natural spread among the cycles of a star. Some cycles are longer than the average, some shorter. It appears to be usually a matter of chance, in a long-period variable, whether a particular cycle is long or short.

"In view of the improbability that over two different intervals of time there will be exactly the same proportions of long and short cycles, unpredictable deviations from uniform time-keeping should be expected."

As for evolutionary changes among these stars, the two scientists admit they have probably occurred since the universe was formed several billion years ago, but they find "no good evidence" of such a change during the past century. If there is any general evolutionary change, they say, it is too slow to be detected over so short a period as a hundred years.

The "mathematical chance" solution fitted nearly all of the stars observed, the only exceptions being a small group of stars which have shown increases or decreases "of too systematic a nature to be explicable by the natural spread among cycles." These included the stars R Hydrae, R Aquilae, U Bootis, R. Cancri and S Serpentis.

Science News Letter, September 18, 1937

Some kinds of palms make suitable house plants, says a Cornell botanist, but he warns that they cannot stand sudden changes of temperature.

Soviet scientists are trying to find out the meaning of 50 great structures of rough piled stones, about 3,000 years old, in Azerbaidjan.

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•First Glances at New Books

Biography—Zoology

THE MAKING OF A SCIENTIST—Raymond L. Ditmars—*Macmillan,* 258 p., illus., $2.75. Ditmars has told us much of the animal world in which he has become familiar, particularly about snakes; now he tells us of that most interesting animal that wears Ditmars' skin, and how he became an "animal man." Inevitably, of course, no end of his friends in scales and fur figure in the tale: for Ditmars, like everyone else, is part of all he has experienced. He is generous with good photographs.

Science News Letter, September 18, 1937

Physiology

TEXTBOOK OF GENERAL PHYSIOLOGY—T. Cunliffe Barnes—*Blakiston's,* 554 p., illus., $4.50.

Science News Letter, September 18, 1937

Physics

FOUNDATIONS OF COLLEGE PHYSICS—Samuel Robinson Williams—*Ginn,* 630 p., illus., $4. A new text by the professor of physics at Amherst College. It has the virtue of simplicity of presentation, good problems, and a large number of superior diagrams and illustrations.

Science News Letter, September 18, 1937

Invention

GADGETS—*Hugo Gernsback, Ed., and Pub., 99 Hudson St., New York, N. Y.*—Published monthly, $3. per year, 25 c per copy. A new monthly, "digest" style magazine devoted to a resume of the newest, inexpensive labor-saving devices that peer at one from the counters of modern super-drug stores and elsewhere.

Science News Letter, September 18, 1937

Chemistry

A TEXT-BOOK OF INORGANIC CHEMISTRY FOR UNIVERSITY STUDENTS (5th ed.) J. R. Partington—*Macmillan,* 1062 p., illus., $4.60. Another revision of this most popular British text, with more detail on the heavier isotopes of hydrogen, thermochemistry, nitrogen fixation, and silicates as the major changes.

Science News Letter, September 18, 1937

Biology

TESTS IN BIOLOGY—Frederick L. Fitzpatrick—*Houghton Mifflin,* 40 c. To go with book, BIOLOGY, by Fitzpatrick.

Science News Letter, September 18, 1937

Psychology

IN THE REALM OF MIND—Charles S. Myers—*Cambridge (Macmillan),* 251 p., $2.50. Nine chapters based on lectures of this British psychologist on such varied subjects as choice of a career, the human factor in accidents, musical appreciation, tendency toward internationalism and the nature of mind.

Science News Letter, September 18, 1937

Geology

THE COLORADO DELTA—Godfrey Sykes—*Carnegie Institution of Washington and the American Geographical Society of New York,* 189 p., illus., $4. Forty-five years of careful study of the delta of the Colorado River by Dr. Sykes, research associate of the Carnegie Institution of Washington, are described in this book. The completeness of the work will make it a mine of useful information not only on the Colorado River, but on sedimentation in general. Complete illustrations of the major changes in the Colorado delta, and a number of pertinent maps add to the utility of this work. Extremely clear, untechnical writing, add to its readability.

Science News Letter, September 18, 1937

Agrobiology

ABC OF AGROBIOLOGY—O. W. Willcox—*Norton,* 323 p., $2.75. The author preaches a gospel of the application of exact quantitative-control methods to plant life, and proposes to revolutionize plant production therewith.

Science News Letter, September 18, 1937

Mathematics

ALGEBRA FOR PARENTS: A TEXTBOOK OF ELEMENTARY ALGEBRA—Samuel B. Scott—*Magee,* 236 p., $2.50. Although some schools rightly condemn the practice of some parents of doing, to too great a degree, the homework of their children, the author holds that parents should step in if and when a child is unable to overcome specific obstacles after he has made a sincere and honest effort to do so. The present book on Algebra for Parents will enable the adult to keep at least one jump ahead of their children in this respect.

Science News Letter, September 18, 1937

Photography

ABRIDGED SCIENTIFIC PUBLICATIONS FROM THE KODAK RESEARCH LABORATORIES, VOL. XVII, 1935—*Eastman Kodak Company,* 137 p. Limited number available only from *Kodak Research Laboratories, Kodak Park Works, Rochester, N. Y.* Abstracts of scientific reports from many journals, all relating to photography in some of its phases.

Science News Letter, September 18, 1937

Horticulture

HERBS AND HERB GARDENING—Eleanour Sinclair Rohde—*Macmillan,* 206 p., illus., $3. The first flower gardens were composed of herbs useful in the kitchen or in medicine, and many of our brightest and sprightliest flowers are still redolent of this tradition — lavender, rosemary, thyme, borage, bergamot, and a host of others. This book tells of one woman's experience in making gardens of herbs, of the herb lore she had learned, of the ways in which others may follow her example with interest and pleasure.

Science News Letter, September 18, 1937

Biology

WORKBOOK AND LABORATORY MANUAL IN BIOLOGY FOR USE WITH ANY BIOLOGY TEXTBOOK—C. S. Hann and Mabel B. Stoddard—*College Entrance Book Co.,* 346 p., 70 c.

Science News Letter, September 18, 1937

Chemistry

MODERN-LIFE CHEMISTRY—Frank O. Kruh, Robert H. Carleton, and Floyd F. Carpenter — *Lippincott,* 734 p., illus., $1.80. This high-school text in chemistry is based on the idea that science and adequate philosophy should have their import upon education and that a sound psychology of learning should be involved. The authors charge that the physical sciences have been slow to adopt this method and offer the present book to remedy the situation.

Science News Letter, September 18, 1937

Aviation

LOST FLIGHTS OF GUSTAVE WHITEHEAD—Stella Randolph — *Places, Inc., Washington, D. C.,* 95 p., $2. This book summarizes the attempt to fly—and the apparently successful flight—of Gustave Whitehead. That the reputed flight occurred two years, four months, and three days before those of the Wright Brothers at Kitty Hawk, North Carolina, forms the backbone of the book.

Science News Letter, September 18, 1937

Chemistry

SELECTED TOPICS IN COLLOID CHEMISTRY: WITH ESPECIAL REFERENCE TO BIOCHEMICAL PROBLEMS — Ross Aiken Gortner — *Cornell Univ. Press,* 169 p., $2.50. This book is based on the series of George Fisher Baker lectures in Chemistry at Cornell University which were given by Professor Gortner, in the academic year of 1935-1936.

Science News Letter, September 18, 1937